

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of
John R. MURPHY et al.

International Application No.
PCT/US00/29231

International Filing Date:
23 October 2000

For: VACCINE COMPOSITIONS

X

BOX SEQUENCE
Commissioner for Patents
Washington, D.C. 20231

STATEMENT ACCOMPANYING SEQUENCE LISTING

Sir:

Applicants enclose herewith the sequence listing in computer readable form (*i.e.*, a diskette) as well as a paper copy for the above referenced U.S. National application. The sequence listing does not include matter which goes beyond the content of the Application as filed and the information recorded on the diskette is identical to the written sequence listing.

Respectfully submitted,

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SEQUENCE LISTING

<110> Murphy, John R.
O'Lear, Edward
Harrison, Robert J.

<120> Vaccine Compositions

<130> AMSC 3.3-001

<140> To be assigned
<141>

<150> PCT/US00/29231
<151> 2000-10-23

<160> 36

<170> PatentIn Ver. 2.1

<210> 1
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 1
accagatctg ccgaaaaact tcga

24

<210> 2
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 2
accagatctc cgccttttagt attta

25

<210> 3
<211> 27
<212> DNA
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Native tox
operator

<400> 3
ataatttagga tagctttacc taattat

27

098682353
= 064204

<210> 4
<211> 19
<212> DNA
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: DNA target site

<400> 4
gtaggtagg ctaacctat 19

<210> 5
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Consensus-binding sequence

<220>
<221> modified_base
<222> (1)...(25)
<223> "n" represents variable bases

<400> 5
ananttaggn tagnctannc tnnnn 25

<210> 6
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Variant DNA

<400> 6
twaggttags ctaacctwa 19

<210> 7
<211> 230
<212> PRT
<213> Mycobacterium tuberculosis

<400> 7
Met Asn Glu Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
1 5 10 15

Asp Leu Glu Glu Glu Gly Val Thr Pro Leu Arg Ala Arg Ile Ala Glu
20 25 30

Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ser Arg Met
35 40 45

Glu Arg Asp Gly Leu Leu Arg Val Ala Gly Asp Arg His Leu Glu Leu
 50 55 60

Thr Glu Lys Gly Arg Ala Leu Ala Ile Ala Val Met Arg Lys His Arg
 65 70 75 80

Leu Ala Glu Arg Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Glu
 85 90 95

Val His Ala Glu Ala Cys Arg Trp Glu His Val Asn Ser Glu Asp Val
 100 105 110

Glu Arg Arg Leu Val Lys Val Leu Asn Asn Pro Thr Thr Ser Pro Phe
 115 120 125

Gly Asn Pro Ile Pro Gly Leu Val Glu Leu Gly Val Gly Pro Glu Pro
 130 135 140

Gly Ala Asp Asp Ala Asn Leu Val Arg Leu Thr Glu Leu Pro Ala Gly
 145 150 155 160

Ser Pro Val Ala Val Val Val Arg Gln Leu Thr Glu His Val Gln Gly
 165 170 175

Asp Ile Asp Leu Ile Thr Arg Leu Lys Asp Ala Gly Val Val Pro Asn
 180 185 190

Ala Arg Val Thr Val Glu Thr Thr Pro Gly Gly Val Thr Ile Val
 195 200 205

Ile Pro Gly His Glu Asn Val Thr Leu Pro His Glu Met Ala His Ala
 210 215 220

Val Lys Val Glu Lys Val
 225 230

<210> 8
 <211> 223
 <212> PRT
 <213> *Corynebacterium diphtheriae*

<400> 8
 Met Lys Asp Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
 1 5 10 15

Glu Leu Glu Glu Glu Gly Val Thr Pro Leu Arg Ala Arg Ile Ala Glu
 20 25 30

Arg Leu Glu Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ala Arg Met
 35 40 45

Glu Arg Asp Gly Leu Val Val Ala Ser Asp Ser Leu Gln Met Thr
 50 55 60

Pro Thr Gly Arg Thr Leu Ala Thr Ala Val Met Arg Lys His Arg Leu
 65 70 75 80

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Ala Glu Arg Leu Leu Thr Asp Ile Ile Gly Leu Asp Ile Asn Lys Val
85 90 95

His Asp Glu Ala Cys Arg Trp Glu His Val Met Ser Asp Glu Val Glu
100 105 110

Arg Arg Leu Val Lys Val Lys Asp Val Ser Arg Ser Pro Phe Gly Asn
115 120 125

Pro Ile Pro Gly Leu Asp Glu Leu Gly Val Gly Asn Ser Asp Ala Ala
130 135 140

Ala Pro Gly Thr Arg Val Ile Asp Ala Ala Thr Ser Met Pro Arg Lys
145 150 155 160

Val Arg Ile Val Gln Ile Asn Glu Ile Phe Gln Val Glu Thr Asp Gln
165 170 175

Phe Gln Leu Leu Asp Ala Asp Ile Arg Val Gly Ser Glu Val Glu Ile
180 185 190

Val Asp Arg Asp Gly His Ile Thr Leu Ser His Asn Gly Lys Asp Val
195 200 205

Glu Leu Leu Asp Asp Leu Ala His Thr Ile Arg Ile Glu Glu Leu
210 215 220

<210> 9

<211> 174

<212> PRT

<213> *Staphylococcus epidermidis*

<400> 9

Met Thr Val Ser Cys Pro Pro Pro Ser Thr Ser Glu Arg Glu Glu Gln
1 5 10 15

Ala Arg Ala Leu Cys Leu Arg Leu Leu Thr Ala Arg Ser Arg Thr Arg
20 25 30

Ala Glu Leu Ala Gly Gln Leu Ala Lys Arg Gly Tyr Pro Glu Asp Ile
35 40 45

Gly Asn Arg Val Leu Asp Arg Leu Ala Ala Val Gly Leu Val Asp Asp
50 55 60

Thr Asp Phe Ala Glu Gln Trp Val Gln Ser Arg Arg Ala Asn Ala Ala
65 70 75 80

Lys Ser Lys Arg Ala Leu Ala Ala Glu Leu His Ala Lys Gly Val Asp
85 90 95

Asp Asp Val Ile Thr Thr Val Leu Gly Gly Ile Asp Ala Gly Ala Glu
100 105 110

Arg Gly Arg Ala Glu Lys Leu Val Arg Ala Arg Leu Arg Arg Glu Val

115

120

125

Leu Ile Asp Asp Gly Thr Asp Glu Ala Arg Val Ser Arg Arg Leu Val
130 135 140

Ala Met Leu Ala Arg Arg Gly Tyr Gly Gln Thr Leu Ala Cys Glu Val
145 150 155 160

Val Ile Ala Glu Leu Ala Ala Glu Arg Glu Arg Arg Arg Val
165 170

<210> 10

<211> 225

<212> PRT

<213> *Mycobacterium leprae*

<400> 10

Met Asn Asp Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
1 5 10 15

Asp Leu Glu Glu Glu Gly Ile Val Thr Pro Leu Arg Ala Arg Ile Ala
20 25 30

Glu Arg Pro Thr Val Ser Gln Thr Val Ser Arg Met Glu Arg Asp Gly
35 40 45

Leu Leu Arg Val Ala Gly Asn Arg His Leu Glu Leu Thr Thr Lys Gly
50 55 60

Arg Ala Met Ala Ile Ala Val Met Arg Lys His Arg Leu Ala Glu Arg
65 70 75 80

Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Glu Val His Ala Glu
85 90 95

Ala Cys Arg Trp Glu His Val Met Ser Glu Asp Val Glu Arg Arg Leu
100 105 110

Ile Lys Val Leu Asn Asn Pro Thr Thr Ser Pro Phe Gly Asn Pro Ile
115 120 125

Pro Gly Leu Leu Asp Leu Gly Ala Gly Pro Asp Ala Ser Ala Ala Asn
130 135 140

Ala Lys Leu Val Arg Leu Thr Glu Leu Pro Ser Gly Ser Pro Val Ala
145 150 155 160

Val Val Val Arg Gln Leu Thr Glu His Val Asp Asp Ile Asp Leu Ile
165 170 175

Thr Arg Leu Lys Asp Thr Gly Val Val Pro Asn Ala Arg Val Thr Val
180 185 190

Glu Thr Ser Pro Ala Gly Asn Val Ile Ile Ile Ile Pro Gly His Glu
195 200 205

Asn Val Thr Leu Pro His Glu Met Ala His Ala Val Lys Val Glu Lys
210 215 220

Val
225

<210> 11
<211> 230
<212> PRT
<213> *Mycobacterium tuberculosis*

<400> 11
Met Asn Glu Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
1 5 10 15

Asp Leu Glu Glu Glu Gly Val Thr Pro Leu Arg Ala Arg Ile Ala Glu
20 25 30

Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ser Arg Met
35 40 45

Glu Arg Asp Gly Leu Leu Arg Val Ala Gly Asp Arg His Leu Glu Leu
50 55 60

Thr Glu Lys Gly Arg Ala Leu Ala Ile Ala Val Met Arg Lys His Arg
65 70 75 80

Leu Ala Glu Arg Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Glu
85 90 95

Val His Ala Glu Ala Cys Arg Trp Glu His Val Met Ser Glu Asp Val
100 105 110

Glu Arg Arg Leu Val Lys Val Leu Asn Asn Pro Thr Thr Ser Pro Phe
115 120 125

Gly Asn Pro Ile Pro Gly Leu Val Glu Leu Gly Val Gly Pro Glu Pro
130 135 140

Gly Ala Asp Asp Ala Asn Leu Val Arg Leu Thr Glu Leu Pro Ala Gly
145 150 155 160

Ser Pro Val Ala Val Val Val Arg Gln Leu Thr Glu His Val Gln Gly
165 170 175

Asp Ile Asp Leu Ile Thr Arg Leu Lys Asp Ala Gly Val Val Pro Asn
180 185 190

Ala Arg Val Thr Val Glu Thr Thr Pro Gly Gly Val Thr Ile Val
195 200 205

Ile Pro Gly His Glu Asn Val Thr Leu Pro His Glu Met Ala His Ala
210 215 220

Val Lys Val Glu Lys Val
225 230

<210> 12
 <211> 233
 <212> PRT
 <213> *Mycobacterium smegmatis*

<400> 12
 Met Asn Asp Leu Val Asp Thr Thr Glu Asn Tyr Leu Arg Thr Ile Tyr
 1 5 10 15

Asp Leu Glu Glu Glu Gly Val Val Pro Leu Arg Ala Arg Ile Ala Glu
 20 25 30

Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ser Arg Met
 35 40 45

Glu Arg Asp Gly Leu Leu His Val Ala Gly Asp Arg His Leu Glu Leu
 50 55 60

Thr Asp Lys Gly Arg Ala Leu Ala Val Ala Val Met Arg Lys His Arg
 65 70 75 80

Leu Ala Glu Arg Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Asp
 85 90 95

Val His Ala Glu Ala Cys Arg Trp Glu His Val Met Ser Glu Glu Val
 100 105 110

Glu Arg Arg Leu Val Gln Val Leu Glu Asn Pro Thr Thr Ser Pro Phe
 115 120 125

Gly Asn Pro Ile Pro Gly Leu Thr Glu Leu Ala Val Thr Pro Gly Val
 130 135 140

Asn Thr Glu Asp Val Ser Leu Val Arg Leu Thr Glu Leu Pro Val Gly
 145 150 155 160

Met Pro Val Ala Val Val Val Arg Gln Leu Thr Glu His Val Gln Gly
 165 170 175

Asp Thr Asp Leu Ile Gly Arg Leu Lys Glu Ala Gly Val Val Pro Asn
 180 185 190

Ala Arg Val Thr Val Glu Ala Asn Asn Gly Gly Val Met Ile Val
 195 200 205

Ile Pro Gly His Glu Gln Val Glu Leu Pro His His Met Ala His Ala
 210 215 220

Val Lys Val Glu Lys Val Glu Lys Val
 225 230

<210> 13
 <211> 174
 <212> PRT

<213> *Mycobacterium tuberculosis*

<400> 13

Met Thr Val Ser Cys Pro Pro Pro Ser Thr Ser Glu Arg Glu Glu Gln
1 5 10 15

Ala Arg Ala Leu Cys Leu Arg Leu Leu Thr Ala Arg Ser Arg Thr Arg
20 25 30

Ala Glu Leu Ala Gly Gln Leu Ala Lys Arg Gly Tyr Pro Glu Asp Ile
35 40 45

Gly Asn Arg Val Leu Asp Arg Leu Ala Ala Val Gly Leu Val Asp Asp
50 55 60

Thr Asp Phe Ala Glu Gln Trp Val Gln Ser Arg Arg Ala Asn Ala Ala
65 70 75 80

Lys Ser Lys Arg Ala Leu Ala Ala Glu Leu His Ala Lys Gly Val Asp
85 90 95

Asp Asp Val Ile Thr Thr Val Leu Gly Gly Ile Asp Ala Gly Ala Glu
100 105 110

Arg Gly Arg Ala Glu Lys Leu Val Arg Ala Arg Leu Arg Arg Glu Val
115 120 125

Leu Ile Asp Asp Gly Thr Asp Glu Ala Arg Val Ser Arg Arg Leu Val
130 135 140

Ala Met Leu Ala Arg Arg Gly Tyr Gly Gln Thr Leu Ala Cys Glu Val
145 150 155 160

Val Ile Ala Glu Leu Ala Ala Glu Arg Glu Arg Arg Arg Val
165 170

<210> 14

<211> 228

<212> PRT

<213> *Brevibacterium lactofermentum*

<400> 14

Met Lys Asp Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
1 5 10 15

Glu Leu Glu Glu Glu Gly Ile Val Pro Leu Arg Ala Arg Ile Ala Glu
20 25 30

Arg Leu Glu Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ala Arg Met
35 40 45

Glu Arg Asp Gly Leu Val His Val Ser Pro Asp Arg Ser Leu Glu Met
50 55 60

Thr Pro Glu Gly Arg Ser Leu Ala Ile Ala Val Met Arg Asn Asp Arg
65 70 75 80

Leu Ala Glu Arg Leu Leu Thr Asp Ile Ile Gly Leu Asp Ile His Lys
 85 90 95

 Val His Asp Glu Ala Cys Arg Trp Glu His Val Met Ser Asp Glu Val
 100 105 110

 Glu Arg Arg Leu Val Glu Val Leu Asp Asp Val His Arg Ser Pro Phe
 115 120 125

 Gly Asn Pro Ile Pro Gly Leu Gly Glu Ile Gly Leu Asp Gln Ala Asp
 130 135 140

 Glu Pro Asp Ser Gly Val Arg Ala Ile Asp Leu Pro Leu Gly Glu Asn
 145 150 155 160

 Leu Lys Ala Arg Ile Val Gln Leu Asn Glu Ile Leu Gln Val Asp Leu
 165 170 175

 Glu Gln Phe Gln Ala Leu Thr Asp Ala Gly Val Glu Ile Gly Thr Glu
 180 185 190

 Val Asp Ile Ile Asn Glu Gln Gly Arg Val Val Ile Thr His Asn Gly
 195 200 205

 Ser Ser Val Glu Leu Ile Asp Asp Leu Ala His Ala Val Arg Val Glu
 210 215 220

 Lys Val Glu Gly
 225

 <210> 15
 <211> 226
 <212> PRT
 <213> *Corynebacterium diphtheriae*

 <400> 15
 Met Lys Asp Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
 1 5 10 15

 Glu Leu Glu Glu Glu Gly Val Thr Pro Leu Arg Ala Arg Ile Ala Glu
 20 25 30

 Arg Leu Glu Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ala Arg Met
 35 40 45

 Glu Arg Asp Gly Leu Val Val Ala Ser Asp Arg Ser Leu Gln Met
 50 55 60

 Thr Pro Thr Gly Arg Thr Leu Ala Thr Ala Val Met Arg Lys His Arg
 65 70 75 80

 Leu Ala Glu Arg Leu Leu Thr Asp Ile Ile Gly Leu Asp Ile Asn Lys
 85 90 95

 Val His Asp Glu Ala Cys Arg Trp Glu His Val Met Ser Asp Glu Val

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100

105

110

Glu Arg Arg Leu Val Lys Val Leu Lys Asp Val Ser Arg Ser Pro Phe
115 120 125

Gly Asn Pro Ile Pro Gly Leu Asp Glu Leu Gly Val Gly Asn Ser Asp
130 135 140

Ala Ala Ala Pro Gly Thr Arg Val Ile Asp Ala Ala Thr Ser Met Pro
145 150 155 160

Arg Lys Val Arg Ile Val Gln Ile Asn Glu Ile Phe Gln Val Glu Thr
165 170 175

Asp Gln Phe Thr Gln Leu Leu Asp Ala Asp Ile Arg Val Gly Ser Glu
180 185 190

Val Glu Ile Val Asp Arg Asp Gly His Ile Thr Leu Ser His Asn Gly
195 200 205

Lys Asp Val Glu Leu Leu Asp Asp Leu Ala His Thr Ile Arg Ile Glu
210 215 220

Glu Leu
225

<210> 16
<211> 230
<212> PRT
<213> *Mycobacterium tuberculosis*

<400> 16
Met Asn Glu Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
1 5 10 15

Asp Leu Glu Glu Glu Gly Val Thr Pro Leu Arg Ala Arg Ile Ala Glu
20 25 30

Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ser Arg Met
35 40 45

Glu Arg Asp Gly Leu Leu Arg Val Ala Gly Asp Arg His Leu Glu Leu
50 55 60

Thr Glu Lys Gly Arg Ala Leu Ala Ile Ala Val Met Arg Lys His Arg
65 70 75 80

Leu Ala Glu Arg Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Glu
85 90 95

Val His Ala Glu Ala Cys Arg Trp Glu His Val Met Ser Glu Asp Val
100 105 110

Glu Arg Arg Leu Val Lys Val Leu Asn Asn Pro Thr Thr Ser Pro Phe
115 120 125

Gly Asn Pro Ile Pro Gly Leu Val Glu Leu Gly Val Gly Pro Glu Pro
 130 135 140

Gly Ala Asp Asp Ala Asn Leu Val Arg Leu Thr Glu Leu Pro Ala Gly
 145 150 155 160

Ser Pro Val Ala Val Val Arg Gln Leu Thr Glu His Val Gln Gly
 165 170 175

Asp Ile Asp Leu Ile Thr Arg Leu Lys Asp Ala Gly Val Val Pro Asn
 180 185 190

Ala Arg Val Thr Val Glu Thr Thr Pro Gly Gly Val Thr Ile Val
 195 200 205

Ile Pro Gly His Glu Asn Val Thr Leu Pro His Glu Met Ala His Ala
 210 215 220

Val Lys Val Glu Lys Val
 225 230

<210> 17
 <211> 235
 <212> PRT
 <213> *Mycobacterium smegmatis*

<400> 17
 Met Asn Asp Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
 1 5 10 15

Asp Leu Glu Glu Glu Gly Val Val Pro Leu Arg Ala Arg Ile Ala Glu
 20 25 30

Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ser Arg Met
 35 40 45

Glu Arg Asp Gly Leu Leu His Val Ala Gly Asp Arg His Leu Glu Leu
 50 55 60

Thr Asp Lys Gly Arg Ala Leu Ala Val Ala Val Met Arg Lys His Arg
 65 70 75 80

Leu Ala Glu Arg Leu Leu Val Asp Val Ile Leu Pro Trp Glu Asp Gly
 85 90 95

Val His Ala Glu Ala Cys Arg Trp Glu His Val Met Ser Glu Glu Val
 100 105 110

Glu Arg Arg Leu Val Gln Val Leu Glu Asn Pro Thr Thr Ser Pro Phe
 115 120 125

Gly Asn Pro Ile Pro Gly Leu Thr Glu Leu Ala Val Thr Pro Gly Val
 130 135 140

Asn Thr Glu Asp Val Ser Leu Val Arg Leu Thr Glu Leu Pro Val Gly
 145 150 155 160

Met Pro Val Ala Val Val Val Arg Gln Leu Thr Glu His Val Gln Gly
165 170 175

Asp Thr Asp Leu Ile Gly Arg Leu Lys Glu Ala Gly Val Val Pro Asn
180 185 190

Ala Arg Val Thr Val Glu Ala Asn Asn Asn Gly Gly Val Met Ile Val
195 200 205

Ile Pro Gly His Glu Gln Val Glu Leu Pro His His Met Ala His Ala
210 215 220

Val Lys Lys Lys Val Glu Lys Val Glu Lys Val
225 230 235

<210> 18
<211> 225
<212> PRT
<213> *Mycobacterium leprae*

<400> 18
Met Asn Asp Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
1 5 10 15

Asp Leu Glu Glu Glu Gly Ile Val Thr Pro Leu Arg Ala Arg Ile Ala
20 25 30

Glu Arg Pro Thr Val Ser Gln Thr Val Ser Arg Met Glu Arg Asp Gly
35 40 45

Leu Leu Arg Val Ala Gly Asn Arg His Leu Glu Leu Thr Thr Lys Gly
50 55 60

Arg Ala Met Ala Ile Ala Val Met Arg Lys His Arg Leu Ala Glu Arg
65 70 75 80

Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Glu Val His Ala Glu
85 90 95

Ala Cys Arg Trp Glu His Val Met Ser Glu Asp Val Glu Arg Arg Leu
100 105 110

Ile Lys Val Leu Asn Asn Pro Thr Thr Ser Pro Phe Gly Asn Pro Ile
115 120 125

Pro Gly Leu Leu Asp Leu Gly Ala Gly Pro Asp Ala Ser Ala Ala Asn
130 135 140

Ala Lys Leu Val Arg Leu Thr Glu Leu Pro Ser Gly Ser Pro Val Ala
145 150 155 160

Val Val Val Arg Gln Leu Thr Glu His Val Asp Asp Ile Asp Leu Ile
165 170 175

Thr Arg Leu Lys Asp Thr Gly Val Val Pro Asn Ala Arg Val Thr Val

180

185

190

Glu Thr Ser Pro Ala Gly Asn Val Ile Ile Ile Ile Pro Gly His Glu
195 200 205

Asn Val Thr Leu Pro His Glu Met Ala His Ala Val Lys Val Glu Lys
210 215 220

Val
225

<210> 19
<211> 230
<212> PRT
<213> Streptomyces lividans

<400> 19
Met Ser Gly Leu Ile Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Leu
1 5 10 15

Glu Leu Glu Glu Glu Gly Val Val Pro Met Arg Ala Arg Ile Ala Glu
20 25 30

Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ala Arg Met
35 40 45

Glu Arg Asp Gly Leu Val Ser Val Ala Ala Asp Arg His Leu Glu Leu
50 55 60

Thr Asp Glu Gly Arg Arg Leu Ala Thr Arg Val Met Arg Lys His Arg
65 70 75 80

Leu Ala Glu Cys Leu Leu Val Asp Val Ile Gly Leu Glu Trp Glu Gln
85 90 95

Val His Ala Glu Ala Cys Arg Trp Glu His Val Met Ser Glu Ala Val
100 105 110

Glu Arg Arg Val Leu Glu Leu Leu Arg His Pro Thr Glu Ser Pro Tyr
115 120 125

Gly Asn Pro Ile Pro Gly Leu Glu Glu Leu Gly Glu Thr Asp Gly Ala
130 135 140

Asp Pro Phe Leu Asp Glu Gly Met Val Ser Leu Ala Asp Leu Asp Pro
145 150 155 160

Gly Gln Glu Gly Lys Thr Val Val Arg Arg Ile Gly Glu Pro Ile
165 170 175

Gln Thr Asp Ala Gln Leu Met Tyr Thr Leu Arg Arg Ala Gly Val Gln
180 185 190

Pro Gly Ser Val Val Ser Val Thr Glu Ser Ala Gly Gly Val Leu Val
195 200 205

Gly Ser Gly Gly Glu Ala Ala Glu Leu Glu Ala Asp Thr Ala Ser His
210 215 220

Val Phe Val Ala Lys Arg
225 230

<210> 20
<211> 215
<212> PRT
<213> *Staphylococcus epidermidis*

<400> 20
Met Leu Thr Glu Glu Lys Glu Asp Tyr Leu Lys Ala Ile Leu Thr Asn
1 5 10 15

Asp Gly Asp Val Ser Phe Val Ser Asn Lys Lys Leu Ser Gln Phe Leu
20 25 30

Asn Ile Lys Pro Pro Ser Val Ser Glu Met Val Gly Arg Leu Glu Lys
35 40 45

Glu Gly Tyr Val Glu Thr Lys His Tyr Lys Gly Ala Arg Leu Thr Glu
50 55 60

Glu Gly Leu Lys Gln Thr Leu Asp Ile Ile Lys Arg His Arg Leu Leu
65 70 75 80

Arg Leu Phe Leu Ile Glu Ile Leu Gln Tyr Asn Trp Glu Glu Val His
85 90 95

Gln Glu Ala Glu Ile Leu Glu His Arg Ile Ser Asp Leu Phe Val Glu
100 105 110

Arg Leu Asp Lys Ile Leu Asn Phe Pro Lys Thr Cys Pro His Gly Gly
115 120 125

Val Ile Pro Arg Gly Asn Ser Asp Ala Ala Ala Pro Gly Thr Ser Ile
130 135 140

Leu Asn Phe Glu Pro Gly Glu Arg Val Thr Val Arg Arg Val Arg Arg
145 150 155 160

Asp Lys Thr Glu Leu Leu Val Tyr Leu Ser Ser Lys Asp Ile Tyr Ile
165 170 175

Gly Asn Thr Val Glu Ile Val Ser Lys Asp Asp Thr Asn Lys Val Ile
180 185 190

Ile Leu Lys Arg Asn Asp Ile Val Thr Ile Leu Ser Tyr Glu Asn Ala
195 200 205

Met Asn Ile Phe Ala Glu Lys
210 215

<210> 21

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<211> 213
<212> PRT
<213> *Staphylococcus aureus*

<400> 21
Met Leu Thr Glu Glu Lys Glu Asp Tyr Leu Lys Ala Ile Leu Thr Asn
1 5 10 15

Asn Gly Asp Lys Asn Phe Val Thr Asn Lys Ile Leu Ser Gln Phe Leu
20 25 30

Asn Ile Lys Pro Pro Ser Val Ser Glu Met Val Gly Arg Leu Glu Lys
35 40 45

Ala Gly Tyr Val Glu Thr Lys Pro Tyr Lys Gly Val Arg Leu Thr Glu
50 55 60

Asp Gly Leu Thr His Thr Leu Asp Ile Ile Arg His Arg Leu Leu Glu
65 70 75 80

Leu Phe Leu Ile Glu Ile Leu Lys Tyr Asn Trp Glu Glu Val His Gln
85 90 95

Glu Ala Glu Ile Leu Glu His Arg Ile Ser Asp Leu Phe Val Glu Arg
100 105 110

Leu Asp Ser Leu Leu Asn Phe Pro Glu Thr Cys Pro His Gly Gly Val
115 120 125

Ile Pro Arg Asn Asn Glu Tyr Lys Glu Lys Tyr Ile Thr Thr Ile Leu
130 135 140

Asn Tyr Glu Pro Gly Asp Ile Val Thr Ile Lys Arg Val Arg Asp Lys
145 150 155 160

Thr Asp Leu Leu Ile Tyr Leu Ser Ser Lys Asp Ile Ser Ile Gly Asn
165 170 175

Glu Val Glu Ile Val Ser Lys Asp Glu Met Asn Lys Val Ile Ile Ile
180 185 190

Lys Arg Asn Asp Asn Val Ile Ile Val Ser Tyr Glu Asn Ala Met Asn
195 200 205

Met Phe Ala Glu Lys
210

<210> 22
<211> 222
<212> PRT
<213> *Enterococcus faecalis*

<400> 22
Met Thr Pro Asn Arg Glu Asp Tyr Leu Lys Leu Ile Phe Glu Leu Gly
1 5 10 15

Gly Asp Glu Val Lys Val Asn Asn Lys Gln Ile Val Ser Gly Leu Asp
 20 25 30

Val Ser Ala Ala Ser Val Ser Glu Met Ile Ser Lys Leu Val Lys Glu
 35 40 45

Asp Leu Val Glu His Ser Pro Tyr Gln Gly Val Gln Leu Thr Glu Lys
 50 55 60

Gly Leu Lys Lys Ala Ser Thr Leu Ile Arg Lys His Arg Ile Trp Glu
 65 70 75 80

Val Phe Leu Val Glu His Leu Asn Tyr Thr Trp Asn Asp Val His Glu
 85 90 95

Glu Ala Glu Val Leu Glu His Val Thr Ser Gln Thr Leu Val Asn Arg
 100 105 110

Leu Ala Asp Tyr Leu Asn His Pro Glu Phe Cys Pro His Gly Gly Val
 115 120 125

Ile Pro Glu Asp Asn Gln Pro Ile His Glu Glu Lys Arg Gln Thr Leu
 130 135 140

Thr Asp Tyr Pro Val Gly Thr Lys Ile Arg Ile Ala Arg Val Leu Asp
 145 150 155 160

Glu Lys Glu Leu Leu Asp Tyr Leu Val Ser Ile Asp Leu Asn Ile Gln
 165 170 175

Glu Glu Tyr Thr Ile Lys Glu Ile Ala Ala Tyr Glu Gly Pro Ile Thr
 180 185 190

Ile Tyr Asn Glu Asn Lys Glu Leu Ser Val Ser Phe Lys Ala Ala Asn
 195 200 205

Thr Ile Phe Val Glu Pro Leu Ile Arg Glu Ser Glu Glu Asn
 210 215 220

<210> 23
 <211> 215
 <212> PRT
 <213> *Streptococcus gordonii*

<400> 23
 Met Thr Pro Asn Lys Glu Asp Tyr Leu Lys Cys Leu Tyr Glu Leu Gly
 1 5 10 15

Thr Arg His Asn Lys Ile Thr Asn Lys Glu Ile Ala Gly Leu Met Gln
 20 25 30

Val Ser Pro Pro Ala Val Thr Glu Met Met Lys Lys Leu Leu Ala Glu
 35 40 45

Glu Leu Leu Ile Lys Asp Lys Lys Ala Gly Tyr Leu Leu Thr Asp Leu
 50 55 60

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Gly Leu Lys Leu Val Ser Asp Leu Tyr Arg Lys His Arg Leu Ile Glu
65 70 75 80

Val Phe Leu Val His His Leu Gly Tyr Thr Thr Glu Glu Ile His Glu
85 90 95

Glu Ala Glu Val Leu Glu His Thr Val Ser Asp His Phe Val Glu Arg
100 105 110

Leu Asp Gln Leu Leu Asp Tyr Pro Lys Ala Cys Pro His Gly Gly Thr
115 120 125

Ile Pro Ala Lys Gly Glu Leu Leu Val Glu Lys His Lys Leu Thr Leu
130 135 140

Glu Glu Ala Lys Glu Lys Gly Asp Tyr Ile Leu Ala Arg Val His Asp
145 150 155 160

Asn Phe Asp Leu Leu Thr Tyr Leu Glu Arg Asn Gly Leu Gln Val Gly
165 170 175

Lys Thr Ile Arg Phe Leu Gly Tyr Asp Asp Phe Ser His Leu Tyr Ser
180 185 190

Leu Glu Val Asp Gly Gln Glu Ile Gln Leu Ala Gln Pro Ile Ala Gln
195 200 205

Gln Ile Tyr Val Glu Lys Ile
210 215

<210> 24
<211> 217
<212> PRT
<213> Streptococcus mutans

<400> 24
Met Thr Pro Asn Lys Glu Asp Tyr Leu Lys Ile Ile Tyr Glu Leu Ser
1 5 10 15

Glu Arg Asp Glu Lys Ile Ser Asn Lys Gln Ile Ala Glu Lys Met Ser
20 25 30

Val Ser Ala Pro Ala Val Ser Glu Met Val Lys Lys Leu Leu Leu Glu
35 40 45

Asp Leu Val Leu Lys Asp Lys Gln Ala Gly Tyr Leu Leu Thr Lys Lys
50 55 60

Gly Gln Ile Leu Ala Ser Ser Leu Tyr Arg Lys His Arg Leu Ile Glu
65 70 75 80

Val Phe Leu Met Asn His Leu Asn Tyr Thr Ala Asp Glu Ile His Glu
85 90 95

Glu Ala Glu Val Leu Glu His Thr Val Ser Asp Val Phe Val Glu Arg

100

105

110

Leu Asp Lys Phe Leu Asn Tyr Pro Lys Val Cys Pro His Gly Gly Thr
115 120 125

Ile Pro Gly His Gly Gln Pro Leu Val Glu Arg Tyr Arg Thr Thr Leu
130 135 140

Lys Gly Val Thr Glu Met Gly Val Tyr Leu Leu Lys Arg Val Gln Asp
145 150 155 160

Asn Phe Gln Leu Leu Lys Tyr Met Glu Gln His His Leu Lys Ile Gly
165 170 175

Asp Glu Leu Arg Leu Leu Glu Tyr Asp Ala Phe Ala Gly Ala Tyr Thr
180 185 190

Ile Glu Lys Asp Gly Glu Gln Leu Gln Val Thr Ser Ala Val Ala Ser
195 200 205

Gln Ile Tyr Ile Glu Lys Lys Ala Tyr
210 215

<210> 25

<211> 216

<212> PRT

<213> Streptococcus pneumoniae

<400> 25

Met Thr Pro Asn Lys Glu Asp Tyr Leu Lys Cys Ile Tyr Glu Ile Gly
1 5 10 15

Ile Asp Leu His Lys Ile Thr Asn Lys Glu Ile Ala Ala Arg Met Gln
20 25 30

Val Ser Pro Pro Ala Val Thr Glu Met Ile Lys Arg Met Lys Ser Glu
35 40 45

Asn Leu Ile Leu Lys Asp Lys Glu Cys Gly Tyr Leu Leu Thr Asp Leu
50 55 60

Gly Leu Lys Leu Val Ser Glu Leu Tyr Arg Lys His Arg Leu Ile Glu
65 70 75 80

Val Phe Leu Val His His Leu Asp Tyr Thr Ser Asp Gln Ile His Glu
85 90 95

Glu Ala Glu Val Leu Glu His Thr Val Ser Asp Leu Phe Val Glu Arg
100 105 110

Leu Asp Lys Leu Leu Gly Phe Pro Lys Thr Cys Pro His Gly Gly Thr
115 120 125

Ile Pro Ala Lys Gly Glu Leu Leu Val Glu Ile Asn Asn Leu Pro Leu
130 135 140

Ala Asp Ile Lys Glu Ala Gly Ala Tyr Arg Leu Thr Arg Val His Asp
 145 150 155 160
 Ser Phe Asp Ile Leu His Tyr Leu Asp Lys His Ser Leu His Ile Gly
 165 170 175
 Asp Gln Leu Gln Val Lys Gln Phe Asp Gly Phe Ser Asn Thr Phe Thr
 180 185 190
 Ile Leu Ser Asn Asp Glu Asp Leu Gln Val Asn Met Asp Ile Ala Lys
 195 200 205
 Gln Leu Tyr Val Glu Lys Ile Asn
 210 215

<210> 26
 <211> 216
 <212> PRT
 <213> *Streptococcus pyogenes*
 <400> 26
 Met Thr Pro Asn Lys Glu Asp Tyr Leu Lys Cys Ile Tyr Glu Ile Gly
 1 5 10 15
 Ile Asp Leu His Lys Ile Thr Asn Lys Glu Ile Ala Ala Arg Met Gln
 20 25 30
 Val Ser Pro Pro Ala Val Thr Glu Met Ile Lys Arg Met Lys Ser Glu
 35 40 45
 Asn Leu Ile Leu Lys Asp Lys Glu Cys Gly Tyr Leu Leu Thr Asp Leu
 50 55 60
 Gly Leu Lys Leu Val Ser Glu Leu Tyr Arg Lys His Arg Leu Ile Glu
 65 70 75 80
 Val Phe Leu Val His His Leu Asp Tyr Thr Ser Asp Gln Ile His Glu
 85 90 95
 Glu Ala Glu Val Leu Glu His Thr Val Ser Asp Leu Phe Val Glu Arg
 100 105 110
 Leu Asp Lys Leu Leu Gly Phe Pro Lys Thr Cys Pro His Gly Gly Thr
 115 120 125
 Ile Pro Ala Lys Gly Glu Leu Leu Val Glu Ile Asn Asn Leu Pro Leu
 130 135 140
 Ala Asp Ile Lys Glu Ala Gly Ala Tyr Arg Leu Thr Arg Val His Asp
 145 150 155 160
 Ser Phe Asp Ile Leu His Tyr Leu Asp Lys His Ser Leu His Ile Gly
 165 170 175
 Asp Gln Leu Gln Val Lys Gln Phe Asp Gly Phe Ser Asn Thr Phe Thr
 180 185 190

Ile Leu Ser Asn Asp Glu Asp Leu Gln Val Asn Met Asp Ile Ala Lys
195 200 205

Gln Leu Tyr Val Glu Lys Ile Asn
210 215

<210> 27
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Consensus
sequence

<400> 27
gtaggtagg ctaacctat 19

<210> 28
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Consensus
sequence

<400> 28
ttaggtagg ctaacctaa 19

<210> 29
<211> 19
<212> DNA
<213> *Cornyebacterium diphtheriae*

<400> 29
ttaggatgc tttacctaa 19

<210> 30
<211> 19
<212> DNA
<213> *Streptomyces pilosus*

<400> 30
ttaggtagg ctcacctaa 19

<210> 31
<211> 19
<212> DNA
<213> Unknown Organism

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<223> Description of Unknown Organism: 16S ribosomal RNA

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19

<210> 32
<211> 19
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<223> Description of Unknown Organism: 19 kDa antigen

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gcaggccagt gaaacctgt

19

<210> 33
<211> 20
<212> DNA
<213> Unknown Organism

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<400> 33
acaggtggtg ctcaaccacg

20

<210> 34
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<223> Description of Unknown Organism: phoP homologue

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gaaggttaacg ttcaaccaat

20

<210> 35
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<213> Unknown Organism

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<223> Description of Unknown Organism: adhB homologue

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gcaggtgacc gtcaaccgat

20

<210> 36
<211> 19

<212> DNA
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: narG homologue

<400> 36
gaaggtcaac caaacaaga

19

0906032001